

I claim:

1. A device for distending a blood vessel of a human or animal comprising:  
a stretching mechanism attachable directly to a blood vessel at at least two attachment positions thereon; and  
means for operating the stretching mechanism to cause the blood vessel portion between said at least two attachment positions to be stretched axially.
2. The device of claim 1, wherein said at least two attachment positions are in a fixed position relative to one another.
3. The device of claim 1, wherein the operating means can displace said at least two attachment positions away from each other over a period of time.
4. The device of claim 3, wherein the stretching mechanism comprises a pair of opposed straps that can be removably secured at said two attachment positions.
5. The device of claim 4, wherein the stretching mechanism further comprises a pair of push/pull rods each connected to the opposed straps.
6. The device of claim 1, wherein the stretching mechanism can stretch the vessel portion rectilinearly, curvilinearly, or in a combination thereof.
7. The device of claim 1, wherein the stretching mechanism can stretch the vessel portion curvilinearly.
8. The device of claim 1, further comprising a controller for controlling the operating means.

9. The device of claim 1, wherein the means for operating the stretching mechanism comprises a prime mover that is electronically or hydraulically driven.
10. The device of claim 1, wherein the stretching mechanism comprises an inflation or expansion means disposed between said at least two attachment positions.
11. The device of claim 10, wherein the inflation means comprises a balloon.
12. The device of claim 10, further comprising a rigid surface having (i) two opposing flexible ends for removably securing to said at least two attachment positions, and (ii) a pair of plates projecting from the rigid surface, wherein the plates are substantially parallel to each other between the flexible ends and the inflation or expansion means is disposed between the plates.
13. The device of claim 1, wherein the stretching mechanism comprises a curved or angled surface having two opposing flexible ends that can be removably secured at said two attachment positions, wherein the flexible ends can be drawn towards one another to effect said stretching.
14. The device of claim 1, wherein all or a portion of the device is radioopaque.
15. A method for distending a blood vessel of a human or animal comprising:  
attaching a stretching mechanism to a blood vessel at at least two attachment positions thereon; and  
operating the stretching mechanism over a period of time to cause the blood vessel portion between said at least two attachment positions to be stretched axially.
16. The method of claim 15, wherein the stretching occurs *in vivo*.

17. The method of claim 15, wherein the blood vessel is excised from the human or animal before attachment of the stretching mechanism.
18. The method of claim 15, wherein said at least two attachment positions are displaced away from each other over a period of time.
19. The method of claim 15, wherein said at least two attachment positions remain in a fixed position relative to one another during said operating of the stretching mechanism.
20. The method of claim 15, wherein the stretching mechanism is operated intermittently.
21. The method of claim 15, wherein the stretching mechanism is operated continuously.
22. The method of claim 15, wherein the stretching mechanism is operated cyclically.

23. A method of forming an autologous vascular tissue graft for a human or animal in need thereof, comprising:

(a) distending a donor blood vessel by use of a method which comprises

(i) attaching a stretching mechanism directly to the donor vessel at at least two attachment positions thereon, and

(ii) operating the stretching mechanism gradually or repeatedly over a period of time sufficient to axially stretch the donor vessel between said at least two attachment positions to a desired length;

(b) excising a stretched portion of the donor vessel; and

(c) suturing the ends of the donor vessel to repair the donor vessel.

24. The method of claim 23, wherein the device or a portion thereof is radioopaque, further comprising taking an x-ray of said radioopaque device or portion thereof to determine the extent of stretching.

25. The method of claim 20, wherein the stretching mechanism further comprises a microprocessor, the method further comprising programming the microprocessor to control the stretching.

26. A method of forming an autologous vascular tissue graft for a human or animal in need thereof, comprising:

- (a) excising a donor vessel portion of a blood vessel from the human or animal; and
- (b) distending the donor vessel portion by use of a method which comprises
  - (i) attaching a stretching mechanism directly to the donor vessel portion at at least two attachment positions thereon, and
  - (ii) operating the stretching mechanism gradually or repeatedly over a period of time sufficient to axially stretch the donor vessel portion between said at least two attachment positions to a desired length.

27. The method of claim 26, wherein the stretching is performed with the donor vessel portion in a medium for cell growth.